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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,095	07/27/2001	Gaku Sugahara	740819-605	6059

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WASHINGTON, DC 20005-3096

EXAMINER

ZAHN, JEFFREY N

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/890,095

Applicant(s)

SUGAHARA ET AL.

Examin r

Jeffrey N Zahn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 1-16, these claims recite a semiconductor laser or method for fabricating a semiconductor laser within the preamble of the claims; however, the body of these claims does not have the structural elements or steps to support a semiconductor laser. Accordingly, these claims are vague and indefinite. What structure makes up the resonant cavity? What structure comprises the active region/layer? The phrase "at the main surface and the opposite surface" is vague/unclear because the "main surface" is not specified or attributed to a specific facet or face whereby it is clear exactly which surface is being referred to. These claims should represent the embodiment of the invention as disclosed in Fig. 1.

In addition, it is unclear/vague whether the first dielectric layer contains niobium oxide, as Claim 1 is written.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al. (US 5844931) in view of Caprara et al. (US 6285702).

Regarding Claims 1-11, Sagawa et al. discloses a semiconductor device comprising ;

a resonant cavity (col. 6, lines 10-36) disposed between a n-type compound semiconductor layer (47) and a p-type compound semiconductor layer (49) at the main surface (edge emitting semiconductor laser; col. 5, line 35- col. 6, line 35) and the opposite surface, light is emitted along the interfaces of the n-type compound semiconductor layer and the p-type compound layer by applying a voltage to each semiconductor layer (edge emitting semiconductor laser; col. 5, line 35- col. 6, line 35); and

a reflective film adhered to an end facet of the resonant cavity (col. 6, lines 15-35).

Sagawa et al. lacks the limitation of "wherein the reflective film is composed of a first dielectric layer and a second dielectric layer containing niobium oxide." Caprara et al. teaches a semiconductor resonant cavity having a wavelength less than .7um (ld.) and the layers are made of Group III-V nitride semiconductors. The reflective film is made of multiple layers that include SiO₂, low refractive index layer, and Nb₂O₅, high refractive index layer. (col. 23, line 64-col. 24, line 10) It would have been obvious to

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one of ordinary skill in the art at the time of the invention to modify Sagawa et al. to include the reflective film claimed for use at a wavelength less than .7um.

Regarding Claims 12-15, in addition to the discussion above regarding Claims 1-11, Caprara et al. discloses a method for fabricating a semiconductor laser device comprising the steps of:

forming a resonant cavity structure by sequentially depositing a plurality of semiconductor layers on a substrate (col. 24, lines 20-41);

exposing an end facet of a resonant cavity on the semiconductor layers by cleaving or etching the substrate on which the semiconductor layers have been deposited (Id.); and

forming a reflective film containing niobium oxide on the exposed end facet of the resonant cavity (col. 23, line 65- col. 24, line 63).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al. (US 5844931) in view of Caprara et al. (US 6285702) as applied to Claims 1-11 and in further view of Yamanaka (US 5872759).

Sagawa et al. (US 5844931) in view of Caprara et al. (US 6285702), as applied to Claims 1-11, lacks a condensing optical system and a photodetector, as claimed.

Yamanaka discloses an optical disk apparatus comprising:

a light-emitter including a semiconductor laser device (1);

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a condensing optical system (4) that condenses laser light emitted from the light-emitter on a storage medium (5) on which data has been recorded (Fig. 2); and

a photodetector (3) that detects part of the laser light that has been reflected from the storage medium (5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Sagawa et al. (US 5844931) in view of Caprara et al. (US 6285702), as applied to Claims 1-11, with the teachings of Yamanaka, as discussed above, to create an optical disk recording system (abstract)

Response to Arguments

Applicant's arguments filed 13 June 2003 have been fully considered but they are not persuasive.

Rejection of the Claims Under 35 U.S.C. § 112.

The Applicant argues that the claims as written recite adequate structure to conveying to one of skill in the art the scope and bounds of the semiconductor laser device of the present invention. This argument is not persuasive because the claims are not definite for the reasons discussed above under 35 U.S.C. § 112 rejections.

Prior Art Rejections.

Applicant's arguments with respect to Claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Jeffrey Zahn

8/20/2003


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